AMENDMENTS TO THE CLAIMS

1. (Currently amended) A system for detecting a load of clothes in an automatic laundry machine of the type which comprises:

a tub ~~(2)~~, a basket ~~(3)~~ mounted in the interior of the tub ~~(2)~~ and which is dimensioned to receive a load of clothes: and an electric motor ~~(10)~~ which selectively rotatively drives the basket ~~(3)~~ in an operation of the machine, ~~characterized in that it comprises~~ comprising:

a voltage sensor ~~(30)~~ to detect the voltage supplied to the electric motor ~~(10)~~;

a rotation sensor ~~(40)~~ detect the rotation of the electric motor ~~(10)~~, and

a control unit ~~(20)~~ operatively associated with a timer ~~(21)~~, with the voltage sensor ~~(30)~~, and with the rotation sensor ~~(40)~~, and which is supplied, in a presetting step of the machine, with data representative of the medium torque Mmot of the electric motor ~~(10)~~ in different voltage ranges, and with data representative of the acceleration and deceleration reference times (Ta1, Td1) of the electric motor ~~(10)~~, with the basket ~~(3)~~ in the unloaded condition, between two distinct and predetermined rotation values of the electric motor ~~(10)~~, in order to calculate the reference moment of inertia (Jv) of the basket in the unloaded condition, said control unit ~~(20)~~ receiving, selectively, at the beginning of each operation of the machine, data representative of the acceleration and deceleration operation times (Ta2, Td2) of the electric motor ~~(10)~~, with the basket containing a load of clothes, between said rotation values of the electric motor ~~(10)~~, and processing the data representative of the medium torque Mmot of the electric motor ~~(10)~~, in the voltage range detected by the voltage sensor ~~(30)~~, and the data of the acceleration and deceleration reference times (Ta1, Td1) and of the acceleration and deceleration operation times (Ta2, Td2), in order to determine the moment of inertia (Jc) of the basket ~~(3)~~ with the load of clothes and the difference of said moments of inertia (Jc and Jv) of the basket ~~(3)~~, and to produce a signal representative of the mass of the load of clothes.

2. (Currently amended) The system according to claim 1, wherein ~~characterized in that~~ the rotation sensor ~~(40)~~ is a tachometer operatively associated with the electric motor ~~(10)~~.

3. (Currently amended) The system according to claim 1, wherein ~~characterized in that~~ the control unit ~~(20)~~ calculates the reference moment of inertia (Jv) of the basket ~~(3)~~ in the unloaded condition, by means of successive calculations of the moments of inertia of the basket ~~(3)~~ from the data of the acceleration reference time (Ta1) and, subsequently, of the deceleration reference time (Td1), establishing, in the first calculation, zero value for the resistive moment of the basket ~~(3)~~ produced by the friction between the relatively moving parts upon the rotation of the basket ~~(3)~~.

4. (Currently amended) The system according to claim 3, wherein ~~characterized in that~~ the calculation of the reference inertia moment (Jv) is effected by the control unit (20) utilizing the formulas:

$$(1)\ Ta1 = \frac{2\pi\,\Delta rpm}{60} \times \frac{Jv}{Mmot - Mres}$$

$$(2)\ Td1 = \frac{2\pi\,\Delta rpm}{60} \times \frac{Jv}{Mres}$$

5. (Currently amended) The system according to ~~any of the~~ claims 1~~-4,~~ ~~characterized in that it~~ further ~~comprises~~ comprising:

~~operatively associated with the control unit (20)~~ an inlet value means ~~(60)~~, operatively associated with the control unit, to control the supply of the washing liquid to the machine, and

a level meter ~~(50)~~ provided to detect determined levels of the washing liquid within the basket ~~(3)~~, said control unit ~~(20)~~ associating the signal representative of the mass of the load of clothes with an adequate level of the washing liquid in the basket ~~(3)~~, so as to produce a blocking signal to the inlet valve means ~~(60)~~, interrupting the supply of the washing liquid to the machine when the level meter ~~(50)~~ detects said adequate level of washing liquid has been reached.

6. (Currently amended) The system according to claim 5, wherein ~~characterized in that~~ the inlet valve means ~~(60)~~ is an electrovalve that is normally closed.

7. (Currently amended) The system according to claim 6, wherein ~~characterized in that~~ the level meter ~~(50)~~ is a pressure switch mounted to the tub ~~(2)~~.

8. (Currently amended) The system according to claim 1, wherein ~~characterized in that~~ the control unit ~~(20)~~ is programmed to command the energization of the electric motor ~~(10)~~, accelerating it until reaching a maximum rotation that is higher than said distinct and predetermined rotation values, and then de-energizing the electric motor ~~(10)~~ so that its rotation decelerates to a value that is lower than said distinct and predetermined values, both in the presetting step and in the beginning of each operation of the machine.

9. (Currently amended) The system according to claim 8, wherein ~~characterized in that~~ said maximum rotation is of about 1300 rpm.

10. (Currently amended) The system according to claim 9, wherein ~~characterized in that~~ said distinct and predetermined rotation values maintain a mutual difference of about 460 rpm.

11. (Currently amended) A process for detecting a load of clothes in an automatic laundry machine of the type which comprises a tub ~~(2)~~; a basket ~~(3)~~ mounted in the interior of the tub ~~(2)~~ and dimensioned to receive a load of clothes; and an electric motor ~~(10)~~ which drives, selectively and rotatively, the basket ~~(3)~~ in an operation of the machine, which ~~process is characterized in that it~~ comprises the steps of:

- rotatively driving the electric motor ~~(10)~~ with the basket ~~(3)~~ in the unloaded condition, maintaining its energization until a maximum rotation has been reached, the electric motor ~~(10)~~ being then de-energized and decelerated to a reduced rotation value, as a function of the friction between the movable parts;
- detecting the rotation of the electric motor ~~(10)~~ in two distinct and predetermined rotation values, which are lower than the maximum rotation value, both in the acceleration phase and the deceleration phase;
- measuring the acceleration and deceleration reference times (Ta1 and Td1) of the electric motor ~~(10)~~ between said distinct and predetermined rotation values;

- calculating a reference moment of inertia (Jv) of the basket ~~(3)~~ in the unloaded condition, in a step of presetting the machine to a posterior operation, by processing the data representative of the acceleration and deceleration reference times (Ta1 and Td1) and of the known medium torque (Mmot) of the electric motor ~~(10)~~ for the determined voltage;

- before each washing operation of the machine, measuring the voltage supplied to the electric motor ~~(10)~~ and rotatively driving the electric motor ~~(10)~~ with the basket ~~(3)~~ containing a load of clothes, maintaining the energization of the electric motor ~~(10)~~ until said maximum rotation has been reached, and de-energizing and decelerating the electric motor ~~(10)~~ by action of the friction between the movable parts;

- detecting the rotation of said electric motor ~~(10)~~ in the two distinct and predetermined rotation values in the acceleration and deceleration phases with the load of clothes;

- measuring the acceleration and deceleration operation times (Ta2 and Td2) of the electric motor ~~(10)~~ between said distinct and predetermined rotation values;

- calculating the moment of inertia (Jc) of the basket with the load of clothes, by processing the data representative of the acceleration and deceleration operation times (Ta2, Td2) and of the medium torque (Mmot) of the electric motor ~~(10)~~ for the detected supply voltage; and

- calculating the difference between said moments of inertia (Jc, Jv) of the basket ~~(3)~~ and producing a signal representative of the mass of the load of clothes.

12. (Currently amended) The process according to claim 11, wherein ~~characterized in that~~ the calculation of the reference moment of inertia (Jv) of the basket ~~(3)~~ in the unloaded condition is effected through successive calculations of the moments of inertia of the basket ~~(3)~~ from the data of the acceleration reference time (Ta1) and then of the deceleration reference time (Td1), giving, in the first calculation, zero value to the resistive moment (Mres) of the basket ~~(3)~~ produced by the friction between the relatively moving parts upon the rotation of the basket ~~(3)~~.

13. (Currently amended) The process according to claim 12, wherein ~~characterized in that~~ the calculation of the reference moment of inertia (Jv) is effected according to the formulas:

$$(1)\ Ta1 = \frac{2\pi\,\Delta rpm}{60} \times \frac{Jv}{Mmot - Mres}$$

$$(2)\ Td1 = \frac{2\pi\,\Delta rpm}{60} \times \frac{Jv}{Mres}$$

14. (Currently amended) The process according to claim 13, wherein ~~characterized in that~~ the processing of the data used for calculating both the reference moment of inertia (Jv) and the moment of inertia (Jc) and for producing the signal representative of the load of clothes is effected by a control unit ~~(20)~~ operatively associated with a voltage sensor ~~(30)~~, with a timer ~~(21)~~, and with a rotation sensor ~~(40)~~ coupled to the electric motor ~~(10)~~.

15. (Currently amended) The process according to ~~any of the claims 11-14~~ claim 11, further ~~characterized in that it comprises~~ comprising the steps of:

associating the signal representative of the load of clothes with a determined level of the washing liquid in the basket ~~(3)~~, and

producing a blocking signal, for interrupting the supply of the washing liquid to the machine when the determined level of the washing liquid has been reached.